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The CHEMIST

NOVEMBER, 1939 VOLUME XVI, No. 8

THE YOUNG CHEMIST AND THE GOVERNMENT SERVICE

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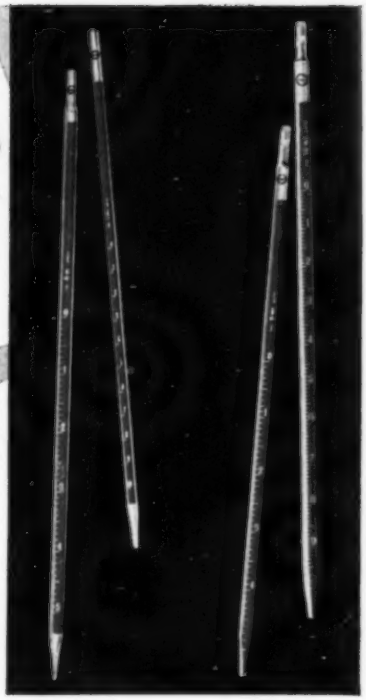

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The CHEMIST

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THE AMERICAN INSTITUTE OF CHEMISTS
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Dinner in Honor of President Moore

The first meeting of the season held by the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS was an informal dinner given in honor of President Robert J. Moore on Friday, November third, at The Chemists' Club, New York, N. Y. Dr. Harry G. Lindwall, chairman of the Chapter, introduced the speakers, who were Dr. Marston T. Bogert, Dr. Robert Calvert, Dr. W. T. Read, Dr. F. D. Snell, and Dr. Maximilian Toch.

Dr. Bogert stated that perhaps one keynote of Dr. Moore's success was his appreciation and capacity for friendship. "So many of us are occupied with our own rather sufficient interests that we have little time for the cultivation of friendship, but Dr. Moore gives generously of his health, his time, and his strength to helping others." Dr. Moore's work on the problem of the licensing of chemists was also complimented. As Dr. Bogert said, "I think that Dr. Moore has done more than anybody else to bring the importance of licensing to the attention of chemists".

Dr. Calvert recounted incidents about Dr. Moore's experiences as a student and instructor in chemistry at Columbia University, where, after

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being at Columbia from nine to five daily, he then attended night classes at Cooper Union.

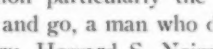
Dr. Read said that while his acquaintanceship with Dr. Moore did not go back further than 1933, he had been greatly impressed at that time with Dr. Moore's splendid work in the North Jersey Section of the American Chemical Society, where he acted as a catalyst, and that later he appreciated Dr. Moore's qualities even more as they became associated in the work of THE AMERICAN INSTITUTE OF CHEMISTS. Dr. Read also said that Dr. Moore was exceptionally informed on the subject of the history of science organizations; and that he was making a great contribution to the advancement of the profession of chemist in his capacity as president of the professional organization of chemists.

Dr. Snell spoke of Dr. Moore's steady advancement through his work for the various chemical organizations to which he belonged, and complimented him on his ability to carry on the work of the INSTITUTE as it was transferred to him by Dr. Toch, the preceding president.

Dr. Toch commented on Dr. Moore's monumental work in the field of synthetic resins, and on his ability in the general field of chemistry, and mentioned particularly his forty-three papers on scientific subjects. Dr. Toch also discussed the reluctance of society to adopt scientific discoveries at the time they are made, and gave several examples to substantiate this theme.

Dr. Moore, in acknowledgment, said, "I deeply appreciate this privilege of representing THE AMERICAN INSTITUTE OF CHEMISTS here tonight. Most of you realize that this is in reality a testimonial to the officers and fellowship of THE AMERICAN INSTITUTE OF CHEMISTS bestowed on the person of the president to receive it. In citing the excellent growth of the INSTITUTE in the last few years, it is absolutely necessary to mention particularly the work of one man who has seen presidents come and go, a man who does his work quietly and efficiently — our Secretary, Howard S. Neiman". Dr. Moore then recounted incidents about some of Columbia's famous chemists and also discussed briefly the rise of chemical organizations in the United States.

The meeting was exceptionally well-attended both by members of the New York Chapter and the Pennsylvania Chapter.



The next meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS will be held on Tuesday, December 12, 1939.

The Young Chemist and the Government Service

By **Louis Marshall, F.A.I.C.**

The eighth of a series of articles on the opportunities for chemists in the government service

Food and Drug Administration

THE three subdivisions of the Department of Agriculture which have been described, the bureaus of Chemistry and Soils, Dairy Industry, and Home Economics, are primarily research bureaus dealing with investigations of agricultural commodities. A fourth, the Food and Drug Administration, is essentially an organization devoted to administering certain Acts of Congress designed to safeguard the health and well-being of our nation. These acts are, first and most important, the Food and Drugs Act, which has been succeeded by the far more comprehensive Federal Food, Drug, and Cosmetic Act, the Insecticide Act, the Import Milk Act, the Tea Act, the Caustic Poison Act, and lastly the Naval Stores Act. An enormous amount of high-grade chemical analytical work is done in the routine of administering these laws. It must also be said that the devising of new methods of analysis, and the refinement of old methods, entails an amount of research work that is not inconsiderable. As an illustration of the latter function, one can cite the working out of an analytical method for the determination of foreign matter in cheese.

Certain microcolorimeter determinations of minute quantities of metals and organic materials present in foodstuffs, either as adulterants or as natural constituents, have been developed to a satisfactory degree of accuracy. By means of the neutral wedge photometer, the quantities of lead, tin, and bismuth in foods and other products are estimated. The photoelectric photometer is employed for determining lactic acid, carotene, and artificial butter flavor, as well as for evaluating various colorimetric fluorine methods. The investigations in the field of photochemistry are continuing and further refinements of analytical procedure may be expected.

The Food and Drug Administration has laboratories in Washington, D. C., and in sixteen of the leading cities of the country. The New York laboratories, for instance, are located at 201 Varick Street,

the Chicago laboratories at Van Buren and Canal Streets, and the San Francisco laboratories at Sansome and Washington Streets. For practical purposes, the administration of the Acts is divided into three districts, the Eastern, the Central, and the Western, with their respective headquarters at the stations cited above. Each district is headed by its district chief.

The great Food and Drugs Act which became law on June 30, 1906, is "An act for preventing the manufacture, sale, or transportation of adulterated, or misbranded, or poisonous, or deleterious foods, drugs, medicines, and liquors, and for regulating traffic therein, and for other purposes". The Act defines a drug as any medicine or preparation which is recognized in the *United States Pharmacopoeia* or *National Formulary* for internal or external use. If the product is not recognized by either of these authorities, then, for the purposes of the Act, a drug is also defined as any substance or mixture of substances which is held out to be efficaceous in the prevention, mitigation, or cure, of any disease of man or animal. Similarly a food is defined as an article used for eating, drinking, confectionery, or condiment purposes by man or animal. The Act states that any person who violates its provisions, has committed a misdemeanor and, depending upon the nature of the offense, may be fined or imprisoned, or both.

It is important to emphasize that the Act concerns itself only with those foods or drugs which enter interstate or foreign commerce. The Food and Drug Administration has no power to investigate or prosecute those cases in which the manufacture and sale of products are carried out within a single state. This must be left to local authorities. However, products which are manufactured and sold within the District of Columbia or within the Territories of the United States are subject to the jurisdiction of the Food and Drug Administration. Also, contracts for the purchase of foodstuffs by Federal departments stipulate that the deliveries shall conform in every respect to the provisions of the Food and Drugs Act of June 30, 1906, and subsequent amendments thereto. The Act provides not only for the criminal prosecution of the person or firm responsible for violating its provisions, but also for the seizure and removal from the market of adulterated or misbranded products. The Administration employs a staff of inspectors, many of whom are chemists. These men visit food or drug manufacturing establishments to observe the raw materials used, the sanitation of the plant, and to get such other information as will assist them in determining whether or not infractions of the law are

occurring. The inspectors are too small in number to cope with the immense interstate traffic in foods and drugs. They therefore try to concentrate on the small minority of manufacturers who either deliberately or ignorantly violate the law.

The work involved in the building up of a criminal case against a manufacturer of adulterated or misbranded foods or drugs can be outlined as follows: The inspector collects samples of a suspected product, and forwards them to his laboratory for analysis. The analysis may require the services of a chemist, bacteriologist, a pharmacologist, a toxicologist, or a microscopist. After the analysis is completed, the results, together with a recommendation as to the proper action to be taken, are sent to the district chief. The latter, if circumstances so warrant, causes a citation to be sent to the manufacturer instructing him to appear for a hearing at station headquarters. The manufacturer or his attorney appears at the hearing, and either orally or in writing presents his case as to why the Government should not take further action. At the conclusion of the hearing, the station chief sends a report of the case, together with his recommendations, to the district chief. The latter indorses or modifies the recommendations, and then sends all the information on the case to the Chief of the entire Food and Drug Administration at Washington. The latter usually refers the matter to the laboratory in Washington which specializes in the product involved. The specialist decides whether or not prosecution is warranted, and so reports to the Chief of the Administration. If prosecution is recommended, and the Chief concurs, the legal staff of the Department of Agriculture examines the case as to its legal aspects. If it is found that enough evidence has been gathered to support prosecution, the case is sent to the Secretary of Agriculture for approval. It is then sent to the Department of Justice for action before the appropriate Federal Court. The Court hears the case, with or without a jury, renders judgment, and imposes sentence when the verdict is guilty. The chemists, inspectors, and other technical men often appear as witnesses at these trials. When the case is terminated, a Notice of Judgment, giving the essential facts, is made public by the Administration. These Notices of Judgment under the Food and Drug Act appear in booklet form and are published at intervals. In 1937, a total of 1700 notices were issued, 1355 relating to foods and 345 to drugs. They are available at many libraries, and by reading them one can get a good idea of the work of the Food and Drug Administration.

As an illustration, Notice of Judgment 26596 may be described. The case involved cherries which were contaminated with arsenic and lead. On August 3, 1936, the United States Attorney for the Northern District of Illinois, acting upon a report by the Secretary of Agriculture, filed in the district court a libel praying seizure and condemnation of twenty one crates of cherries at Chicago, Illinois, alleging that the article had been shipped in interstate commerce on or about July 29, 1936, by a certain manufacturer. The article was claimed to be in violation of the Food and Drugs Act since it contained the added poisonous and deleterious ingredients, arsenic and lead, in amounts which might have rendered it injurious to health. On October 2, 1936, judgment of condemnation was entered, and it was ordered that the product be destroyed. The presence of arsenic and lead in the cherries was due, no doubt, to their having been sprayed with an insecticidal compound while in the orchard. After they were picked, however, the application of good cleaning methods would have removed the poisonous ingredients. This particular case is known as a seizure action. Legally, it is "U. S. versus 21 crates of cherries". The method of procedure is adopted because it is far speedier than a criminal action and enables the Adminstration to quickly seize and remove from the market a product which may menace the health of consumers. If circumstances warrant, and if sufficient evidence is at hand, criminal proceedings are later instituted against the person or firm responsible for the violation.

The Notices of Judgment concerning foods are published separately from those dealing with drugs. A typical illustration of a notice of judgment concerning drugs is number 21505. The case involved ten gross packages and two gross bottles of aspirin tablets. The product was alleged to be adulterated and misbranded since the label declared that the tablets contained five grains each of aspirin, whereas analysis proved that they contained from 4.1 to 4.3 grains of aspirin each. Therefore, the Government libel praying seizure and condemnation of the product alleged it to be adulterated, since its strength fell below the professed standard under which it was sold, namely, "Tablets Aspirin Five Grains". Misbranding of the product was alleged since the label appearing on it was false and misleading. The Court as a result of testimony, decided that the tablets contained less aspirin than was declared on the label and entered a judgment of condemnation and forfeiture. Since they were fit for use as aspirin tablets, however, the Court also ordered that the packages and bottles be

relabeled to show the correct aspirin content, and be delivered to charitable organizations for use.

The Administration carries out an educational program to acquaint manufacturers with the requirements of the law. Notices which announce enforcement policies are frequently sent to the food and drug trades. These notices give constructive suggestions as to how legal products can be made. The officials of the Administration are willing to give advice to companies on methods of marketing a legal product. This policy of prevention has the effect of reducing the number of infractions of the law. It assures the public of a greater degree of protection than would otherwise be the case, and spares the honest manufacturer the unfavorable publicity incident to litigation.

In carrying out the provisions of the act, the Food and Drug Administration in one year, examined 1,190 samples on which criminal prosecution cases were based, and 1,493 samples which involved seizure actions. The total number of food samples examined during the year was 41,791, and of drug samples 16,092. These figures do not include 176,000 examinations of cream for butter manufacture to which the Administration has been devoting a great deal of attention.

As stated before, the Administration does considerable investigative work on matters which affect foods and drugs. For instance, it has carried out in coöperation with other Federal and State agencies, a highly effective campaign to reduce the amount of insecticidal poisonous spray-residues on fruits. At one time, the situation regarding spray-residues was very bad. Fruits were sold which contained toxic quantities of arsenic trioxide, or lead, or fluorine. Recently, however, most growers have been devoting themselves seriously to spray-residue control, and by appropriate cleaning measures, the fruit has been rendered unobjectionable. The tolerance of 0.01 grain of arsenic trioxide, or of 0.018 grains of lead, or of 0.01 grain of fluorine per pound of fruit has been met by the great majority of interstate consignments of fruits and vegetables. The efforts of the combined Federal and state agencies have nearly eliminated sprayed fruits and vegetables as a public-health hazard. However, constant vigilance is necessary since a shipment is occasionally found which exceeds the permitted tolerance as in the Notice of Judgment regarding cherries cited above.

At one time, inspectors for the Food and Drug Administration learned

that some producers of green peppers were dusting them with calcium arsenate prior to picking. Samples of these peppers were immediately taken for chemical analysis which revealed that some of them contained as much as 0.08 grain of arsenic trioxide per pound, this being eight times greater than the permitted tolerance. The state authorities concerned with this situation notified all growers of the danger involved, and advised the use of an acid wash to remove the spray residue from the peppers before manufacture and sale. Those growers who accepted the advice produced a satisfactory product. Others neglected the cleaning treatment, and seizures due to excessive spray-residue became necessary. At the present time, practically all growers take adequate precautions. Here again is illustrated the virility of an organization which is quick to step in and eliminate a potential menace to the public health.

On another occasion, it was discovered that a western winery was using the highly toxic substance, sodium fluoride, as a fermentation control agent. Chemical analysis disclosed that the wine contained as much as twenty-eight parts per million of fluorine. Most of the business of this winery was intrastate, though there was one interstate shipment which was promptly seized and destroyed. The local authorities appraised the situation, and condemned the entire stock remaining in the winery. This occurrence led to a campaign which has probably succeeded in eliminating fluorine as a contaminating agent in domestic wines.

The Administration recently uncovered a case of food adulteration which was decidedly dangerous to the public health. The case involved a firm which organized for the purpose of marketing a mixture of flour, bran, and the laxative drug, phenolphthalein, which was added to the extent of ten to twelve per cent. The mixture was recommended to bakers to add to their regular bread mix to produce a "laxative health bread". This bread would, of course, have been dangerous to many persons. In view of this fact, 587 packages of the product were seized and criminal proceedings instituted which resulted in a fine of $600.00 against those responsible for the adulteration.

A striking example of the ability of the Administration to rise to an emergency, occurred during the disastrous floods of 1936. Its inspectors in the affected areas dropped all routine, and working in closest cooperation with local officials, prevented the sale of huge quantities of damaged foods and drugs. These products were just as dangerous from the standpoint of contagion as the dirty flood waters. The inspectors, in coöperation with the local sanitary officers, decided to destroy all grains, flour, coffee, and other commodities packed in bulk or in sacks

which showed signs of damage by the flood waters. The destruction was usually carried out by burning the affected products. Raw fruits which had come in contact with the waters were saved by washing with a chlorine solution. Foods in hermetically sealed containers and in screw cap jars which showed no evidence of leakage were also required to be washed with chlorine solution. Those containers which showed leakage were destroyed. In all, it is estimated that about 50,000 tons of foods and drugs were removed from the market and destroyed. These drastic measures were doubtless instrumental in preventing the spread of serious epidemic diseases.

Whenever an alleged case of food poisoning occurs, the Administration immediately investigates to determine whether or not a violation of the Food and Drugs Act has occurred. The investigations have proven that many so-called food poisoning cases are not due to food poisoning at all, but to other causes. Some time ago, for example, a few persons died after sharing in a Thanksgiving Day dinner. The deaths were attributed to botulism caused by canned antipasto which is a variable mixture of tuna, anchovies, pickles, mushrooms, capers, peppers, artichokes, and other vegetables. None of the antipasto remained after the meal, and therefore none was available for laboratory examination. However, a nation-wide survey of the stock of antipasto in the hands of dealers, involving the laboratory examination of twelve hundred containers, was made. In no case was there found the toxin or spores of the bacteria causing the disease. This seemed to prove, as far as it were possible to prove, that the canned antipasto was not the cause of the fatalities.

The Food and Drugs Act stipulates that a food is to be declared adulterated if, among other reasons, "It consists in whole or in part of a filthy, decomposed, or putrid animal or vegetable substance". For instance, adulteration is practiced, if decomposed tomatoes are used in the preparation of pulp, puree, or catsup, and in one year the central inspection district of the Administration, the one whose headquarters are in Chicago, found that forty-five per cent of the samples of tomato products collected for examination were adulterated under this provision of the law. That is to say, thirty-eight of the sixty-four manufacturers from whom samples were taken were shipping illegal goods. The vigilance of the Administration in seizing the adulterated products and instituting criminal proceedings against the offenders has had the usual effect of causing them to improve their factory practices. Recently, manufactured tomato products have been, on the whole,

satisfactory from the standpoint of decomposition. It cannot be too strongly emphasized however, that experience has shown that a relaxation of enforcement work is quickly followed by a recurrence of bad practices. Constant vigilance is necessary. For example, if the Administration had withdrawn its inspection work on canned salmon after the year in which not a single consignment was found objectionable, then one hundred and forty-five consignments of decomposed salmon shipped the following year would not have been seized.

Although most forms of present day food adulterations have their origin in the carelessness of the manufacturer or the natural decomposition of a food product, others are carried out deliberately, with malice aforethought. An outstanding example of the latter practice is the addition of tea-seed oil to olive oil as an adulterant. Tea-seed oil, obtained from the seed of a plant which is closely related to the beverage tea plant, is produced in large quantities in the Orient. It is imported into this country where it is widely used in the paint and textile industries. When the oil is refined, it is very suitable for eating purposes, and chemically it gives tests which are practically identical with those of olive oil. This fact enabled dishonest producers to adulterate the more expensive olive oil with quantities ranging up to seventy-five per cent of tea-seed oil, and marketing the product as pure olive oil. For a time, the Administration was powerless to prevent this gross misbranding and adulteration of a staple product because no chemical test was known by which the adulterant, tea-seed oil, could be identified. Finally a young chemist in the New York station of the Administration succeeded in devising a test for the identification of tea-seed in olive oil. Within a short time after this tool had been placed in its hands, the Administration seized 13,000 gallons of "olive oil" as being adulterated with tea-seed oil. In the first court case on one of these seizures, the author demonstrated the chemical procedure in court and the jury accepted its validity, bringing in a verdict in favor of the Government.

In its enforcement work on drugs, the Administration is still confronted with interstate shipments of medicines which bear claims for the treatment of cancer, tuberculosis, and diabetes. This despite the fact that medical authorities are unanimous in declaring that there is no known cure for these diseases. The procedure in such cases is the prompt seizure of the drugs under the misbranding provisions of the Food and Drugs Act, followed by criminal prosecution of the offenders. The prosecution, however, is difficult to carry out, since the

Government must prove fraud which, legally speaking, is no easy task. However, it is gratifying to note that under the new Federal Food, Drug, and Cosmetic Act, it is not necessary to prove that false claims of curative effect on the labels of patent medicines were made with willful intent to deceive. The mere presence of false claims, whatever the intent, establishes a violation.

The administration has lately uncovered another species of fraud which has to do with the so-called "rubbing alcohol compounds". These have been used for bathing and massaging purposes for many years, and ethyl alcohol has always been the principal constituent. Recently, some manufacturers have substituted the cheaper isopropyl alcohol for the time-honored ethyl alcohol, but the labels on their products do not inform the purchaser of this substitution. The labels merely present some such legend as "70% alcohol". This practice constitutes misbranding since one of the regulations of the Administration is that when the word "alcohol" is used on a label without qualification, ethyl alcohol is meant. Even in those labels which state "70% alcohol" and also have the chemical symbol of isopropyl alcohol, $CH_3CHOHCH_3$, the product is misbranded because persons not versed in chemistry would not understand the significance of the symbol. In one year, thirty-three seizures aggregating 20,000 bottles of isopropyl alcohol mixtures sold as "rubbing alcohol compounds", were made.

The Administration has recently established a vitamin division whose function it is to examine, by means of biological assays, those samples which are labeled with vitamin claims. Cod-liver oil, for example, forms a frequent subject for assay of its vitamin D content. It has been found that the oil intended for human use usually measures up to the standards declared on the labels. It must be remembered, however, that more than half of the four and one-half million gallons of oil consumed yearly in this country is used for animal feeding. For instance, cod-liver oil is fed to poultry to obtain maximum growth and maximum egg production. As a feed for animals, it also comes within the scope of the Food and Drugs Act. The Administration tested twenty-one samples of cod-liver oil offered for poultry feeding, and found that fourteen of the samples, or more then sixty per cent failed to meet their declared standard for vitamin D potency. Some of the oils were found to be practically worthless. In view of this situation, importations of cod-liver oil are held up at the ports of entry until their vitamin D potency is determined. By this

means, the buyer of the oil is assured that the product has the potency declared on the label. This illustrates the ability of the Food and Drug Administration to adopt the latest methods and discoveries which may be of value in its work of standardizing the quality of foods and drugs, detecting adulteration, and preventing fraud.

Chemists Answer S. O. S. of Shipping

An abstract of an article which appeared in *The Nautical Gazette*, February 25, 1939

S—O—S. S—O—S. S—O—S. Two men enter a pump room of a tanker to make repairs; both die.

S—O—S. S—O—S. S—O—S. Four men enter a hold containing rice bran that had heated spontaneously and lose their lives.

S—O—S. S—O—S. S—O—S. Four men enter a hold, containing hides and coffee that had become wet, and all die.

SUCH a dramatic presentation of events that actually occurred on various merchant vessels in the past is, of course, something of an exaggeration, yet it is indicative of the vagueness and perplexity that ship operators experienced only fifteen to twenty years ago when accidents like this happened. They knew the death-dealing agent to be a gas, but what they could not understand was why their safety precautions were not adequate. Why, for example, rigging wind chutes in a cargo tank was not sufficient to purify the air in all cases. For a volatile cargo it was adequate, but for the heavier oils that had a persistent habit of lingering in nooks and crannies, it was not. The fact of the matter was that the home-made remedies were not working and perhaps the operators did feel like flashing an S.O.S. Whatever the form of the distress call was, this much is known—chemistry responded and has performed an invaluable service to the maritime industry, both from the standpoint of safety and economy.

Chemistry had been serving in an advisory capacity to industry ashore before it went to the aid of maritime interests. However, as far back as 1900, one steamship line, the Old Dominion Company, was employing a chemist as a technical advisor whose task was the examination of ship

supplies, to determine the heat content of the bunker coal, and to pass judgment on cargoes of a hazardous nature.

In those days the ship operator who was progressive enough to recognize the dollars and cents value of chemistry to his business was more the exception than the rule. However the explosion of the English tanker, Tancarville, in 1891, opened a new field of inquiry to the consulting chemist. Accidents like the first one illustrated in this article—men entering tank spaces and being overcome—were occurring with increasing frequency, and notices of explosions were creeping into print.

The matter of gas hazards has been pretty well "aired" by safety committees, like the marine section of the National Safety Council, various publications, and ship operators themselves. Yet, human nature being what it is, accidents will still be with us, and with new types of material going into ship construction and new cargoes being carried, combinations may result which will present new hazards and thereby justify any additional enlightenment on the subject.

Free air normally contains about twenty-one per cent of oxygen. When this content, a measure by volume, decreases to ten per cent human beings lose consciousness, and when it goes down to six per cent, death follows in about as many minutes. Enclosed holds, tanks, double bottoms, boilers, and the like should always be regarded as potential hazards, either as reservoirs of air with a lethal deficiency of oxygen or of toxic gases like carbon monoxide.

Carbon monoxide has been commonly found where steel has been covered with linseed oil paint for protection against corrosion. The real treachery of a deficiency of oxygen or the presence of carbon monoxide gas is that neither is revealed by odor. And the effectiveness with which moist steel can deplete the oxygen supply in an enclosed space is food for thought.

Aside from paint and metal, certain organic subtances have been known to exhaust oxygen from the air. There is an impressive list of general cargo items that have been identified by chemists as culprits in this matter of vitiating air and depleting oxygen supply. Among these are linseed cake, rosin, tobacco, latex, potatoes, oranges, and onions (especially hazardous when they decay), which, combined with moisture may produce a dangerous carbon dioxide condition or even generate carbon monoxide. Scrap iron, which is of timely interest as an export product, presents a constant peril, especially when it is of a fine character in the form of shavings and borings. Because of its high rate

of oxidation, it has to be chemically treated to prevent spontaneous combustion.

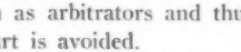
The danger inherent in the carriage of petroleum has become obvious from the spectacular nature of an accident when it occurs. Yet it must be conceded that the companies transporting this type of cargo have an enviable record, considering the slim margin of safety that they have to work with.

Conditioning of boiler feed water represents another field in which the consulting chemist has rendered much assistance to ship owners, principally by achieving more economical operation; and the corrosive action of salt water upon steel hulls, which has been a major bugaboo to your shipping man, also offers him the opportunity to call to his aid, with profit, scientific research.

Ship owners often call in chemists to perform detective work in damage claims and, although infrequently, sabotage presents a *contretemps* to operating managers that generally demands expert verification before charges can be pressed. Chemists have been asked to test drinking water that allegedly had been poisoned by subversive crew members. During the recent maritime strikes, there were instances of crew members throwing sand and emery into engine bearings to force a breakdown, in some cases before the ship had reached the outer harbor. Fortunately, there are not many cases of this nature.

In regard to testimony in court, consulting chemists have often been called in, and it may be said that their opinion is very often the deciding factor in explosions and cargo damage cases. They are sometimes called upon as arbitrators and thus the expense of bringing the dispute to court is avoided.

In view of the assistance that chemical science has already rendered to the marine industry, it is a surprising fact that the industry is not more "research minded", as compared with the railroads, for example, with their coöperative attempts to improve their industry by maintenance of research laboratories. However, any reluctance in this direction on the part of ship operators is in a large measure excusable for the very human reason that experimentation at sea carries a greater responsibility in respect to lives and property than that carried on land.



THE AMERICAN INSTITUTE OF CHEMISTS will occupy Booth 2N on the mezzanine floor of Grand Central Palace, New York, N. Y., December 4-9, 1939, during the Seventeenth Exposition of Chemical Industries.

Hall Canter

It is with deep regret that THE AMERICAN INSTITUTE OF CHEMISTS records the death of Hall Canter on September 2, 1939, in Ashland, Virginia.

Dr. Canter was born on April 5, 1873, in Baltimore, Maryland. He was graduated from Randolph-Macon College with the A.M. degree, and from Johns Hopkins University with the Ph.D. degree. He became professor of chemistry at Randolph-Macon College in 1900 and served in that capacity and as head of the department of chemistry until his death.

Dr. Canter specialized in benzene sulfonic acid derivatives and orthophenyl-sulfonebenzoic acid and its derivatives. He was popular with colleagues and students alike and was known as a talented lecturer. He was a member of the American Chemical Society, the American Association for the Advancement of Science, and a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS.

Frederick D. Crane

The AMERICAN INSTITUTE OF CHEMISTS has received, with deep regret, the report of the death of its charter member, Frederick D. Crane.

Born in Boonton, N. J., on October 16, 1872, Dr. Crane was educated at Union University, Schenectady, N. Y., and at Johns Hopkins University, from which he received the Ph.D. degree in 1898. He served as research chemist for the Synfleur Laboratories at Monticello, N. Y., until he became Professor of Chemistry at Newark College of Engineering. The eleven years preceding his death were spent in travelling, where he gratified his interest in archeology by journeying through Egypt and other countries while studying the chemistry of art materials, ancient glazes, and archeological objects.

Dr. Crane was one of the first organizers of THE AMERICAN INSTITUTE OF CHEMISTS. In 1923 he prepared a questionnaire to determine from chemists what was needed by way of an organization devoted entirely to the professional aspect of the science of chemistry. Dr. Crane became one of the charter members of the INSTITUTE at the time of its organization, in the spring of 1923. He was also a charter member of The Chemists' Club, New York, a member of the New York Horticultural Society, the Royal Horticultural Society of London, the New York Rock Garden Society, and the American Chemical Society.

Bernard Herstein

Bernard Herstein, a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS from 1928 to 1933, died June 8, 1939, in Bernardsville, New Jersey, following an illness of five months. He was born May 6, 1866 in Bochnia, Galicia, and received the Ph.D. degree from the University of Berlin in 1890. Shortly after that he came to the United States and worked successively for the U. S. Bureau of Chemistry as technical expert; as chief of appraisers of chemicals for New York City under the United States Treasury Department; as chief of the Bureau of Insular Affairs and public utilities commissioner for the government of the Philippine Islands; as surveyor of chemical industry for the Peace Conference for the War Industries Bureau; and then, in 1918, became a consulting technician for the United States Industrial Alcohol Company until his retirement a few months before his death. Dr. Herstein specialized in the economic aspects of industrial problems. He is survived by two daughters and two sons, one of whom is Karl M. Herstein, F.A.I.C., consulting chemist of New York, N. Y.

Neil Preston Moore

It is with regret that we record the death, from coronary thrombosis, on April 25, 1939, of Neil Preston Moore, F.A.I.C., analyst, Division of Pomology, College of Agriculture, University of California, Davis, California. Dr. Moore was born on February 7, 1889, at Vina, Tehama County, California. He was graduated from the Leland Stanford Junior University with the Ph.D. degree in chemistry. He specialized in physical chemistry, geological chemistry, and agricultural chemistry. He served as chief chemist for Thornley & Company, San Francisco, from 1922 to 1928 and then became chemist for the College of Agriculture, University of California, in 1929, the position which he held at the time of his death. Dr. Moore is the author of several publications on economic geology and horticultural science. He was a member of Sigma Xi, the American Chemical Society, and a Fellow of The American Association for the Advancement of Science. He joined THE AMERICAN INSTITUTE OF CHEMISTS in 1938.

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CHAPTER REPRESENTATIVES

New York	*Niagara*	*Philadelphia*	*Washington*
Charles A. Marlies	A. W. Burwell	Gilbert E. Seil	Albin H. Warth

The National Council will meet on November 21, 1939, and on December 12, 1939, at The Chemists' Club, 52 East 41st Street, New York, N. Y.

CHAPTERS

New York

Chairman, Harry G. Lindwall *Vice-Chairman,* Beverly L. Clarke

Secretary-treasurer, D. H. Jackson
17 John Street
New York, N. Y.

Council Representative, Charles A. Marlies

The first meeting of the season was an informal dinner given in honor of President Robert J. Moore, at The Chemists' Club, New York, N. Y. Details of this meeting are given on page 363 of this issue of The Chemist.

Niagara

Chairman, Maurice C. Taylor *Vice-chairman,* F. W. Koethen

Secretary-treasurer, Alvin F. Shepard
90 Courier Boulevard
Kenmore, N. Y.

News Reporter to THE CHEMIST, Margaret C. Swisher

Council Representative, Arthur W. Burwell

Carl H. Rasch, *Alternate*

THE Niagara Chapter held a meeting on Friday, October twenty-eighth, at Norton Hall on the University of Buffalo Campus. The dinner was followed by a business meeting at which time the chairman of each standing committee was called upon to report on its objectives and activities for the year. Chairman Taylor gave a brief talk on what a chemist is and what he should contribute to community life, and, at the same time, improve his professional standing and economic status. Dr. Reginald Pegrum, Professor of Geology at the University of Buffalo, gave an interesting and instructive talk on "War and Natural Resources."

Dr. Pegrum said that the present war is an engineer's war and its outcome is dependent upon the supply of natural materials. A country having a mineral supply adequate for peace time may not have sufficient to meet war time demands. During war time, prices usually advance and certain low grade ore deposits in a country can be worked at a profit, thus making up some of the shortage.

In discussing the outcome of the present conflict, Dr. Pegrum said that Germany must import war supplies for a long war and she is in a less favorable position than in 1914-1918. This is a mechanized war, and, due to territorial losses in 1918, Germany does not possess as much of the natural war materials now as she did at that time. Since Great Britain and France obtain much of their war materials from their colonies, they must maintain control of the sea or they will be in the same position as Germany is in. From the practical standpoint, Dr. Pegrum showed that our embargo is ridiculous. It is of little consequence if the steel is made into airplanes and shipped to a country so long as that country is able to import the materials from which steel is made.

In a prolonged war, the U. S. A. is the only country that could supply all divisions of a modern army and navy with petroleum products in adequate amounts. Petroleum is now a war time necessity. Since Russia's supply of oil can reach Germany only through the British controlled Black Sea, or be transported fifteen hundred miles by rail, it is unlikely that Germany can afford to use this source of supply.

The U. S. A. is not only well supplied but is far ahead of any other country in natural resources and in the production of all war materials with the exception of iron alloys. The British Empire has plenty of these alloy metals. Together, the British Empire and the United States own fifty-five percent of the total natural resources of the world, and, because of

certain concessions, they control seventy-five per cent of the world's supply. Because of this fact, the United States and Great Britain can stop and can prevent all wars if they wish to do so.

The meeting for next month will be held at Niagara Falls, N. Y., at which time the functions and objectives of the Niagara Chapter will be discussed.

Pennsylvania

Chairman, Walter L. Obold *Vice-chairman,* A. C. Angus

Secretary-treasurer, Harry C. Winter
The Biochemical Research Foundation
133 South 36th Street
Philadelphia, Penna.

Council Representative, Gilbert E. Seil

News Reporter to THE CHEMIST, Kenneth A. Shull

THE first Fall meeting of the Pennsylvania Chapter was held on Tuesday evening, October twenty-fourth, at the Christian Association Building. A short business meeting followed the dinner, after which Dr. William S. Wadsworth, Coroner's Physician of the City of Philadelphia and a nationally known figure in toxicology, addressed the society on, "What is Toxicology?"

Dr. Wadsworth defined toxicology as the science which studies toxic substances, a toxic substance, or poison, being one which by chemical action deleteriously affects living matter. According to the American point of view, which defines a poison in terms of quantity and time, almost any substance may be placed in this category.

In order to study toxicology it is necessary to know what an organized being is; also knowledge of the substance itself. A toxicologist should, therefore, be well versed in botany, in chemistry, in pathology, in medicine, and in common sense. He should have a good reference library. Dr. Wadsworth has worked out an extensive filing system cataloguing the various poisons, their origin, toxic effects, antidotes, etc.

One of the unfortunate things in this field of study is the fact that no algebraic equation or system of graphs can predict exactly what will happen when a toxic substance acts upon an organism. One of the reasons for this is man's lack of knowledge of living matter.

The speaker exploded the theory that a substance must be soluble in order to have a deleterious effect. He cited calomel as a typical non-soluble poison. Actually there is some sort of attraction between the cell and the foreign material. If the force of the material is greater than that of the cell it may pull the latter apart. Conversely, if that of the cell is greater, the substance may become attached to or may actually enter the cell. When the mechanism of the cell is simply stopped, disease results.

In addition to the subject at hand Dr. Wadsworth expressed some of his own views on the philosophy of science. He pointed out that not only will the individual knowledge of the chemist, the biologist, and the pathologist be required, but also closer coöperation between the groups in order to fathom the secret of life.

Washington

President, Frank O. Lundstrom

Vice-president, Albin H. Warth *Treasurer,* Philip A. Wright

Secretary, Martin Leatherman
9 Quincy Avenue, Hyattsville, Md.

News Reporter to THE CHEMIST, Edward F. Snyder

Council Representative, Albin H. Warth

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R. T. K. Cornwell	B. Makower	R. M. Mehurin	E. K. Ventre
P. R. Dawson	L. N. Markwood	A. R. Merz	C. W. Whittaker
R. B. Deemer		W. M. Noble	J. F. Williams

NORTHERN LIGHTS

By Howard W. Post, F.A.I.C.

Production of Canadian gold totalled 2,492,572 fine ounces for the first half of 1939 with eleven mines coming into operation. The average price was $35.163 per fine ounce, showing a total value of $87,646,309.

Among the projects described in recent issues of publications of Canadian Industries, Ltd., are those covering co-operation between Canadian onion growers and soil chemists, the making of fine pottery, bed springs, new gadgets in cellophane and the waterproofing of textiles.

Canadian Chemistry and Process Industries presents an interesting editorial on "Chemical Supply and Price Outlook."

Perkin Medal

Dr. Charles M. A. Stine has been elected to receive the Perkin Medal of the Society of Chemical Industry for 1940. This medal is awarded annually for valuable work in applied chemistry.

Dr. Stine entered the employ of E. I. du Pont de Nemours & Company in 1909, successively rising through head of the Organic Section, assistant director of the Chemical Department, and director, to vice-president in charge of research, a member of the executive committee and of the board of directors where he serves at present. The medal will be presented on January 12, 1940 at a meeting to be held at The Chemists' Club, New York, N. Y.

THE SCIENCE ANGLER

Kenneth E. Shull, J.A.I.C.

It looks as though hydrogen peroxide has finally gone to the dogs. According to a recent report this versatile substance has been found to be quite effective in freeing our canine friends of parasitic worms. In use, a warm 1.5 per cent solution is introduced into the animal's intestine.

How well we remember those hectic days in Sophomore Quant. Lab.—trying to pipet solutions of potassium cyanide without having to pay a visit to the local hospital.

Our hat is off to the Fisher Scientific Company for having developed a finger operated safety pipet filler for introducing harmful liquids into pipets.

The ability to sleep and to sleep well is one of the finest assets of which man is possessed. Heretofore those having difficulty entering into a state of slumber were destined to become addicts of opium or any one of a number of other alkaloids, barbiturates, bromides, etc.

This should now be a thing of the past, for it has been found that vitamines, particularly B and C, are not only effective as a relief from sleeplessness but serve as a permanent cure. The required dosage may be taken either by mouth or by intravenous injection.

One of the bugbears of the painting profession has been the growth of fungi on certain painted surfaces. And once again the chemist has stepped in and solved the problem. The growths can be prevented by adding a fungicide, such as one of the chlorophenols, directly to the paint.

From England comes word of a new "safe" fluid for preserving insects. Developed as a result of the scarcity of ethyl alcohol it bids fair to replace the latter as a preservative. The formula, as taken from Science, consists of

Glacial acetic acid—	4	parts
Distilled water—	30	"
Formaldehyde—	6	"
95% alcohol—	15	"

The many advantages which it possesses over ethyl alcohol are its non-inflammability, low cost, and the fact that it does not need replacement so often and does not cause undue hardening.

Soap making, in brief, consists in treating tallow, lard, palm oil, or some similar material with an alkali, then adding sodium chloride to "salt-out" the fibrous mass of soap. Certain other materials, such as mineral oil, wax, sodium silicate, and talc are usually incorporated into the final product as fillers.

A new addition to the family of fillers is methyl cellulose. This substance is non-inflammable, non-hygroscopic, can be used in both hard and soft soaps, and by its use the fatty acid content of the soap is reduced approximately to thirty-two per cent.

BOOKS

TEXTBOOK OF ORGANIC CHEMISTRY, by E. Wertheim, F.A.I.C. 830 pp. 41 chapters (1939) *P. Blakiston's Sons & Co., Inc.*

This is a textbook of organic chemistry designed for a two semester beginning course. Throughout the book frequent use is made of graphic formulas, equations, and charts to present the material in a manner which gives the student every aid possible in assimilating and reviewing it. Detailed description of individual compounds has been omitted. Instead, physical constants and descriptions have been given for a whole group of related compounds making it possible to compare reactions, syntheses, uses, etc., with greater ease. Repitition has been used whenever it is possible to show an equation in a different form or with a new implication.

Textbook of Organic Chemistry is divided into two parts. Part one contains nineteen chapters and deals with aliphatic compounds. Part two, which is devoted to aromatic compounds, contains twenty chapters. The Friedel-Crafts reaction, Grignard reaction, Strain theory, optical activity, vitamins, hormones, etc., are discussed in individual chapters. The last two chapters take up the chemistry in the human body and the identification of organic compounds. This book has an excellent appendix containing, among other things, a table of constants of organic compounds. This table is keyed by cross reference to the body of the text and has the advantage of requiring but one reference to obtain these constants and other information.

At the end of each chapter are found somewhat more than the usual number of review questions. These questions cover the important points of the chapter quite thoroughly and, together with the frequent summaries and review outlines, provide considerable aid in assimilating and reviewing the data. Numerous journal references are also given at the end of each chapter.

The author has worked on this book for about fifteen years, revising it on two different occasions before publishing it in its final form. It is clear, direct, and contains a sufficient amount of the human element to make it interesting to the reader.

—Ray E. Inglehart.

STANDARD CHEMICAL & TECHNICAL DICTIONARY. By H. Bennett. *Chemical Publishing Co., Inc.* 1939. 638 pages. Price $10.00.

This volume is exactly what is indicated in its title, both a chemical and technical dictionary, its more than 25,000 definitions being directed not only to chemicals, but also to commercial and generally popular names of chemicals. While the compiler states that this book is not to be considered as a substitute for the many larger chemical dictionaries and encyclopedias, it can be stated for this publication that while the definitions are perhaps more concise than those appearing in larger books, it defines more terms than many of the so-called standard chemical dictionaries.

The chemical and physical properties of the chemicals noted are concisely stated, and an interesting and valuable feature is its inclusion of the latest commercial names of products which have come into general use and which are not contained in strictly chemical

dictionaries. The alphabetical arrangement of chemical compounds is such as to allow ready and immediate reference. This book is so valuable that it should find its place upon the library shelf of every chemist.

HANDLEXIKON DER TIERAERZTLICHEN PRAXIS. By G. Uebele. *J. Ebner's Verlag*, Ulm. a. d. Donau. 2 vols.

The fifth edition of this standard work, intended not only for veterinarians but also for chemists and pharmacists engaged in research or in the manufacture of pharmaceutical preparations for animals, was published in 1938 (volume 1), and 1939 (volume 2).

Uebele, probably the greatest authority in his field, died in 1914, but his successors did excellent work in keeping the contents of this book consistent with the latest developments in veterinary medicine and pharmaceutical chemistry.

Volume 1 (860 pages) describes in alphabetical order the thousands of remedies and medicines in use, often giving exact analytical data, including dosage, action, etc.

Volume 2 (520 pages) contains the diagnosis and therapy of the most important animal diseases. The therapeutic part often refers to the first volume.

This standard German work, if translated into English would be of real value to every one interested in veterinary medicine and pharmaceutical chemistry.

—Rudolf Seiden

CHEMISTRY AT WORK, by McPherson, Henderson, and Fowler. 672 pp. *Ginn and Company* (1938). Price $1.80.

This text in chemistry, designed for use in high schools is profusely illustrated, every picture or diagram showing clearly the thing it is supposed to explain or illustrate, and the language is easy to understand and interesting to read. This text contains suitable test questions, numerous exercises, and chapter summaries. Attention is especially directed to the glossary of important chemical terms, based on the study by Dr. Francis D. Curtis of the technical terms used in a large number of textbooks in chemistry for secondary schools. In common with all more recent texts, this one is considerably more extensive in numbered pages than were former ones. Actually, the factual chemical material has not been extended. The increase in the number of pages is due principally to larger and more numerous illustrations, a less compact style of statement, a more open page, and more material in the appendixes.

LABORATORY UNITS IN CHEMISTRY, by McPherson, Henderson, and Fowler. 328 pp. *Ginn and Company* (1938). Price $.80.

This text is a combination of laboratory experiments and direct-study activities, as a complement to *Chemistry at Work*. The units are planned to meet college-entrance requirements and to offer, as well, a practical introduction to chemistry for students who do not intend to enter college. The tests in this book are adapted from those used by the Evaluation Staff of Progressive Education Association.

DIE RATIONELLE GESTALTUNG DER CHEMISCH-TECHNISCHEN PRODUKTION, by Hans Hoppmann. *Verlag*

Chemie, Berlin.

The subject of this book is the rationality of chemical production. Since the German ideas of rationalism often differ from American ideas, and since the American chemical industry, including its research and literature, is more modern than that of the rest of the world today, this book may not be of great interest to any except those who are interested in the German problems of rationalism in the chemical industry and in their technical economics.

—Rudolf Seiden.

Dr. V. M. Kresin, President, Pan-American Economic News, Inc., 80 Broad Street, New York, N. Y., informs us that he will publish a monthly technical magazine in Spanish entitled, *La Ingenieria e Industria en los Estados Unidos*. The magazine is intended to acquaint Latin America with news and new developments in American engineering and industry. The members of THE AMERICAN INSTITUTE OF CHEMISTS are invited to contribute articles which conform to the type of this magazine. The first issue will be published on December first.

Science Service offers members of THE AMERICAN INSTITUTE OF CHEMISTS a special rate of $3.00 per year (instead of $5.00) for *Science News Letter*, illustrated, which contains a brief, lively summary of new things in science. Information may be obtained from THE CHEMIST, or from Science Service, 2101 Constitution Avenue, Washington, D. C.

An evening course will be given at Columbia University on the subject of Textile Chemistry during both the Winter and Spring sessions. Information may be obtained from the Director of University Extension at that University.

Francis Patrick Garvan

The following appeared in the November, 1939, issue of *America First*, which is devoted to the memory of the late Francis Patrick Garvan:

"AMERICAN INSTITUTE OF CHEMISTS

Francis P. Garvan, who made his ideals become realities; who molded dreams into permanent tangible forms; whose footprints upon the path leading to better humanity are imperishable; who reached out into the darkness and brought light to thousands he never saw, and the silence of his absence will be forever broken by appreciative paeans of praise and thankfulness from a multitude of voices he never heard.

(signed) Howard S. Neiman,
Secretary"

Dr. Alexander Siverman, Head of the Department of Chemistry in the University of Pittsburgh, has been elected a member of the Association Scientifique and Technique de Ceramique of France.

Members of THE AMERICAN INSTITUTE OF CHEMISTS are invited to register at the INSTITUTE'S Booth, Space 2N, on the mezzanine floor of Grand Central Palace during the Seventeenth Exposition of Chemical Industries, to be held December fourth to ninth.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, etc. REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, and MARCH 3, 1933

Of THE CHEMIST, published monthly except June, July, and August at New York, N. Y., for October 1, 1939.

STATE OF NEW YORK } ss.
COUNTY OF NEW YORK }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Vera F. Kimball, editor, who, having been duly sworn according to law, deposes and says that she is the Editor of THE CHEMIST and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

	Name of	Post Office Address
Publisher:	THE AMERICAN INSTITUTE OF CHEMISTS,	233 Broadway, New York, N. Y.
Editor:	Vera F. Kimball,	233 Broadway, New York, N. Y.
Managing Editor:		None
Business Manager:		None

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given).

THE AMERICAN INSTITUTE OF CHEMISTS, INC., 233 Broadway, New York, N. Y.

(Non-profit making corporation. No stockholders.)

Robert J. Moore, President, 230 Grove Street, Bloomfield, N. J.

J. W. E. Harrisson, Vice-president, 214 So. 12th Street, Philadelphia, Penna.

B. H. Knight, Treasurer, 50 East 41st Street, New York, N. Y.

H. S. Neiman, Secretary, 233 Broadway, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) NONE.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given: also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner: and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is——. (This information is required from daily publications only.)

Vera F. Kimball
(Signature of Editor)

Sworn to and subscribed before me this seventeenth day of October, 1939.

Marie A. Kurtzke, Notary Public
(My commission expires March 30, 1940)

Members of THE AMERICAN INSTITUTE OF CHEMISTS are invited to contribute articles of professional interest, not technical, to THE CHEMIST. News items, clippings, or other pertinent information is also welcome.

A new roster of THE AMERICAN INSTITUTE OF CHEMISTS will be issued in January, 1940. Members are requested to send any changes of business address or position to the Secretary before December 15, 1939.

CHEMISTS

W. T. Read, F.A.I.C., Dean of Chemistry at Rutgers University, is again in charge as Director of the Students' Course in chemical engineering which is given regularly at the Exposition of Chemical Industries, to be held in New York on December 4-9, 1939. This course enables the selected college students who enroll to co-ordinate lectures by leading authorities with actual examination of materials and chemical equipment discussed. At no other time is this vast assemblage of merchandise and materials available in one place.

The National Pest Control Association, Inc. held its annual convention from October twenty-third to twenty-fifth at the Hotel Pennsylvania, New York, N. Y. Speakers on the afternoon of October twenty-fourth included Dr. R. C. Roark, Senior Entomologist, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, who spoke on the "Importance of Chemistry in Pest Control", and Dr. W. C. O'Kane, Head, Department of Entomology, College of Agriculture of the University of New Hampshire, who spoke on "Coöperation between Science and the Pest Control Industry". The clinic, under the chairmanship of Harold E. Jennings discussed chemicals and formulae for pest control.

G. J. Esselen, F.A.I.C., will speak on "Ultra-Slow-Motion Photography as Applied to Chemical Engineering Studies", at the meeting of the Pittsburgh Section of the American Chemical Society to be held December 21, 1939.

James D. Cunningham, chairman of the Board of Trustees of Armour Institute of Technology, and Alex. D. Bailey, chairman of the Board of Lewis Institute, announce that their respective Institutes have agreed to consolidate into a new technological center for Chicago.

This is the first occasion on which two colleges of engineering have agreed to merge their interest to produce an institution of more important scope. The name of the new school will be Illinois Institute of Technology. Consolidation of the educational program will be completed by September, 1940, and the balance of this year will be used to plan the integration of activities. For the time being, it will be necessary to operate both the Armour and Lewis plants. Later, the new center of technology will acquire a new conveniently located campus. A Board of Trustees of fifty-five members, made up of the present trustees of both Armour and Lewis, will control the new Institute.

The Department of Commerce, Bureau of the Census, Washington, D. C., announces that the biennial census of manufacturers will be taken in January, 1940, to cover approximately two hundred thousand establishments classified under approximately four hundred separate industries. Census enumerators will visit each manufacturing establishment in the United States to obtain the necessary reports which are required by law. The whole hearted coöperation of business men and trade associations is requested.

The Armour Institute of Technology, Chicago, announces the following new faculty appointments in chemistry for the year 1939-40: Dr. Bruce Longtin, instructor, (formerly at University of California); Dr. Hugh J. McDonald, instructor, (formerly at Carnegie Institute of Technology); Dr. M. J. Murray, assistant professor, (formerly at Lynchburg College); and Mr. Melvin L. Schultz, instructor, (formerly at University of Chicago).

Micro-Chemistry Center Opened at Brussels University

The University of Brussels, with the financial assistance of a group of Belgian industrialists, has opened a Microchemistry Center equipped with the latest laboratory apparatus according to a report published by the U. S. Department of Commerce, from Assistant Trade Commissioner, Edward A. Dow, Jr., Brussels, Belgium.

The Center, states Mr. Dow, is described as being equipped for instruction and research in general qualitative micro-chemistry, elementary micro-analysis by carbon and hydrogen oxidation, elementary micro-analysis by hydrogenation, functional micro-analysis and the determination of physical constants of organic matter.

Henry G. Knight, F.A.I.C., chief of the Bureau of Agricultural Chemistry and Engineering, announced recently that Klare S. Markley, F.A.I.C., has been appointed principal chemist in the oil, fat, and protein division of the Southern Regional Research Laboratory, at New Orleans.

Dr. Markley will be responsible for the scientific and administrative work of the Division which involves fundamental chemical and physical studies on the composition and properties of oils and proteins derived from cottonseed and peanuts.

Chemical Industry Medal

The Chemical Industry Medal of 1939 was presented on November 11, 1939, to Dr. Robert E. Wilson, President of Pan American Petroleum and Transport Company at a joint meeting of the American Section of the Society of Chemical Industry, the New York Section of the American Chemical Society and the New York Section of the American Institute of Chemical Engineers, held at the Chemists' Club, New York, N. Y. Walter P. Cohoe, F.A.I.C., presided. Thomas Midgley, Jr. spoke on the personal side of the medallist's life and Dr. Bruce K. Brown spoke on his technical achievements. James E. Vail, F.A.I.C., presented the medal.

Dr. Wilson spoke on the tremendous quantities of refinery gases produced by cracking in this country for which different uses have been developed. Actual commercial processes were discussed rather than possibilities. For the production of the basic aliphatic chemicals, they stand in much the same position as coal tar does for the aromatics. Many new catalytic processes have been developed for producing high anti-knock gasolines, special aviation fuels, and other synthetic products which, in volume, are even more important to the petroleum industry than the more strictly chemical uses.

James H. Hibben, F.A.I.C., was recently appointed chief of the Chemical Division of the United States Tariff Commission. He was formerly with the Geophysical Laboratory of the Carnegie Institute, Washington, D. C.

EMPLOYMENT

Chemists Available

PHYSICAL CHEMIST, F.A.I.C., with industrial experience in electronics and fluorescent materials. Three years' teaching experience during depression. Fairly at home in the French language. Ph.D., Cornell, 1928. Report of Stevens Human Engineering Laboratory available. Location in metropolitan New York desired. Employed but looking for broader job. Please reply to Box 91, THE CHEMIST.

CHEMIST, 42, Ph.C., F. A. I. C., American born, experience in chemical and pharmaceutical products, foods, specialities, etc. Able to handle analytical, research, production cost and supervision. Miscellaneous pharmaceutical compounding, medicinal and chemical preparations, a specialty. Writer is known for technical publications in the U. S. and abroad. Out of position on account of abandonment of plant with which he had been affiliated for past ten years. Excellent references. Please reply to Box 53, THE CHEMIST.

ORGANIC CHEMIST. B.A. degree. Age 26. Graduate experience Columbia University in Synthetic Organic Chemistry. One year New York University Organic research. Knowledge of X-rays. Please reply to Box 51, THE CHEMIST.

CHEMIST, Ph.D., F.A.I.C., seeks position in industrial research or teaching. Major field organic. Eleven years' experience teaching organic, analytical and advanced inorganic in university. Some direction of research and consulting work. Age 33, married. Phi Beta Kappa, Sigma Xi, Phi Lambda Upsilon. Please reply to Box 53, THE CHEMIST.

METALLURGICAL ANALYST, F.A.I.C. Long experience in analysis of iron, steel, ferrous and non-ferrous alloys. Can take charge of laboratory. Please reply to Box 113, THE CHEMIST.

BIOCHEMIST, F.A.I.C., A.M. degree. Several years' experience in protein research. Particularly interested in the practical utilization of proteins from by-products. Please reply to Box 111, THE CHEMIST.

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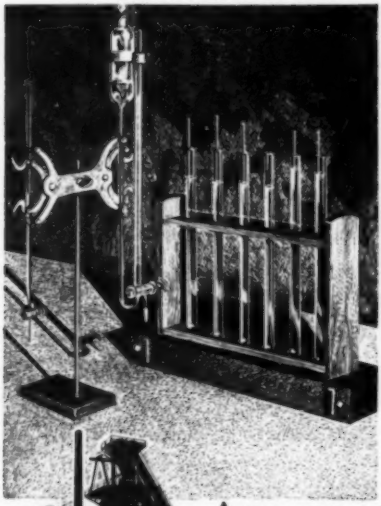

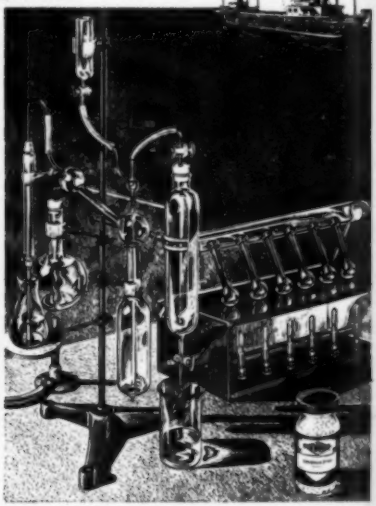

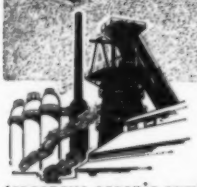

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1964	Mercuric Chloride, *Cryst., Reagent, A.C.S.*
1969	Mercuric Oxide, *Red Powder, Reagent*
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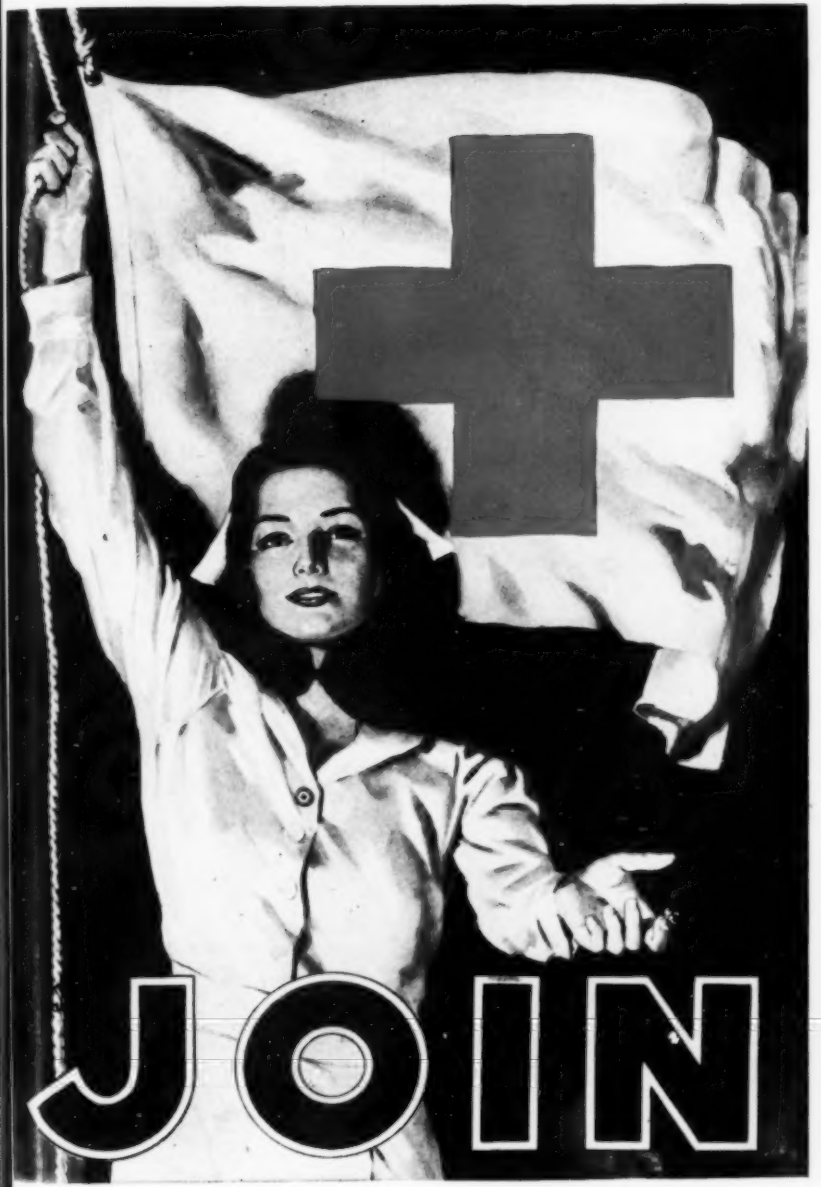
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